Notice of Allowability	Application No.	Applicant(s)	
	10/619,351	LEE ET AL.	
	Examiner	Art Unit	
	Tom V. Sheng	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *amendment filed on 6/8/2006*.

2. ☒ The allowed claim(s) is/are *1 and 21-25*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Attorney Richard Streit on 7/28/2006.

In the claims:

Claim 1, last line, please replace "." with ", " and append "wherein said amplifier includes a second resistor coupled between an inverting terminal of said amplifier and an output terminal, a third resistor coupled between the inverting terminal of said amplifier and a ground, and said amplifier amplifies the smoothed pulse width modulation signal to a predetermined level in order to output the common voltage signal."

Please cancel claim 3.

Please cancel claims 4-20 as corresponding to non-elected species without traverse.

Allowable Subject Matter

2. Claims 1 and 21-25 are allowed.

3. The following is an examiner's statement of reasons for allowance:

The invention is directed to a common voltage regulating circuit of a liquid crystal display device which can be adjusted by software, comprising a pulse signal generating means for outputting a pulse width modulation signal, a smoothing means for smoothing the pulse width modulation signal, and an amplifying means for amplifying the smoothed signal to a direct current level and outputting as a common voltage.

Independent claim 1 identifies the uniquely distinct features "an amplifier having a non-inverting input terminal coupled to the resistor's second end, amplifying the signal smoothed by the first resistor and first capacitor to a predetermined level and outputting a common voltage signal" and "wherein said amplifier includes a second resistor coupled between an inverting terminal of said amplifier and an output terminal, a third resistor coupled between the inverting terminal of said amplifier and a ground, and said amplifier amplifies the smoothed pulse width modulation signal to a predetermined level in order to output the common voltage signal."

Independent claim 21 identifies the uniquely distinct features "a data storage means for receiving a first selection signal, a second selection signal and a pulse width modulation signal, and storing and outputting the pulse width modulation signal according to a combination of the first selection signal and the second selection signal" and "a smoothing means for smoothing a pulse width modulation signal to a direct current level provided from an outside in test mode, and smoothing the pulse width modulation signal to a direct current level provided from the data storage means in write mode".

Didier et al. (US 6,236,384 B1) teach bias voltage control in order to alter the pre-tilt angle of a liquid crystal layer in a LCD. Didier et al. teach generating a pulse-width modulated signal, smoothed by a RC filter and buffered by a buffer amp before driving the LCD. However, Didier et al. do not teach driving of a common voltage to the LCD. Didier et al. also do not teach the amplifier with its connections to other components or the data storage and smoothing means, as claimed in claims 1 and 21.

Furukawa et al. (US 6,388,967 B2) teach a LCD that as the amplitude range of a PWM signal from a PWM signal generator is small, it is possible to adjust the total gain of the signal by disposing an amplifier at the front or rear stage of a filter. Furukawa et al. do not teach above limitations in claims 1 and 21.

Willis (US 2002/0097206 A1) teaches adjusting the common voltage of an LCD to in order to minimize image flicker or sticking. Willis does not teach above limitations in claims 1 and 21.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom V. Sheng whose telephone number is (571) 272-7684. The examiner can normally be reached on 9:00am - 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tom Sheng
July 29, 2006

AMR A. AWAD
PRIMARY EXAMINER